



**FERROXCUBE CORPORATION OF AMERICA** / Saugerties, New York / tel: 914 CHerry 6-2811

Dear Catalog Holder:

At the recent I.F.I.P. '65 Convention, attending engineers showed great interest in Ferroxcube Memory Systems and Recording Heads. The new bulletins which support these products are attached.

1. Insert 2 usec Memory System Bulletin 1803A in the 1800 Section of your catalog. Destroy present Bulletin 1803.
2. Insert Mass Memory Bulletin 1804 in the 1800 Section of your catalog. This is a new bulletin.
3. Insert Recording Head Material Bulletin 1001A in the 1000 Section of your catalog. This bulletin replaces Bulletins 1001 and 1002. Destroy these bulletins.
4. Insert Flying Drum Head (9 Track) Bulletin 1006 in the 1000 Section of your catalog. This is a new bulletin.

If you need extra copies, please write me at the Ferroxcube Corporation, Old Kings Highway, Saugerties, New York.

Cordially,

R. J. Wyllie, Manager  
Advertising and Public Relations



**FERROXCUBE CORPORATION OF AMERICA**

Saugerties, New York / tel: 914 CHerry 6-2811

Dear Catalog Holder:

After you have inserted the new Ferroxcube Bulletin 1803A, we would appreciate you taking a moment and answering these two questions. Return information to Mr. Podsiadlo.

Cordially,

R. J. Wyllie, Manager,  
Advertising and Public Relations

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To: Mr. Edwin Podsiadlo  
Manager-Computer Products  
Ferroxcube  
Old Kings Highway  
Saugerties, New York

Subject: 2 usec Memory System

Temperature Requirements:

My application needs the 52.02 WT (0°C - +50°C) \_\_\_\_\_.

My application is \_\_\_\_\_.

My application needs the 52.02 NT (+10°C - +35°C) \_\_\_\_\_.

My application is \_\_\_\_\_.

Thank you.

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_



# FERROXCUBE CORPORATION OF AMERICA SAUGERTIES, NEW YORK

# FERROXCUBE RECORDING HEAD MATERIALS AND CORES

Bulletin 1001

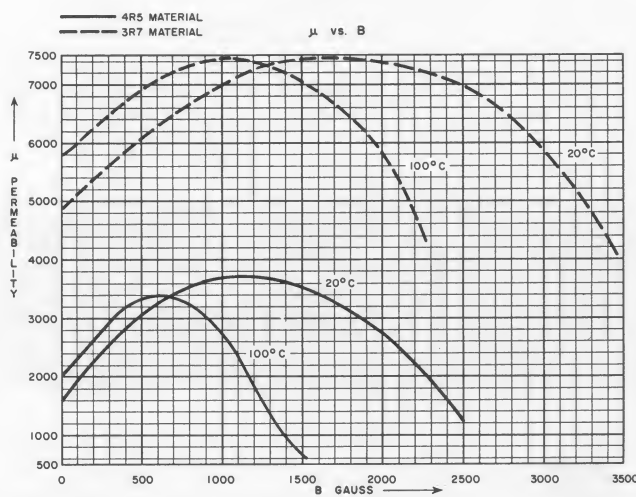
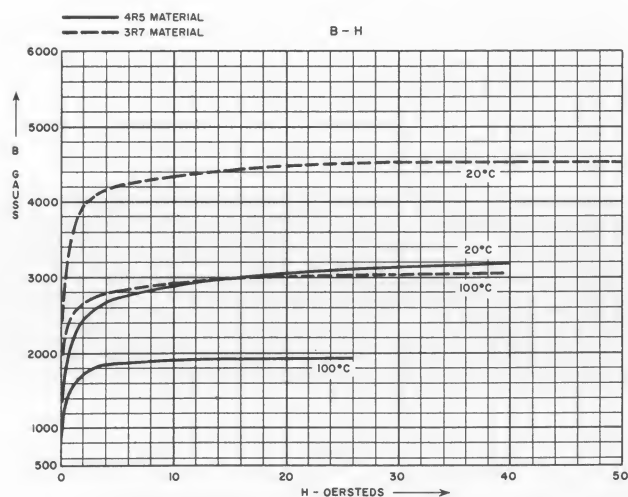
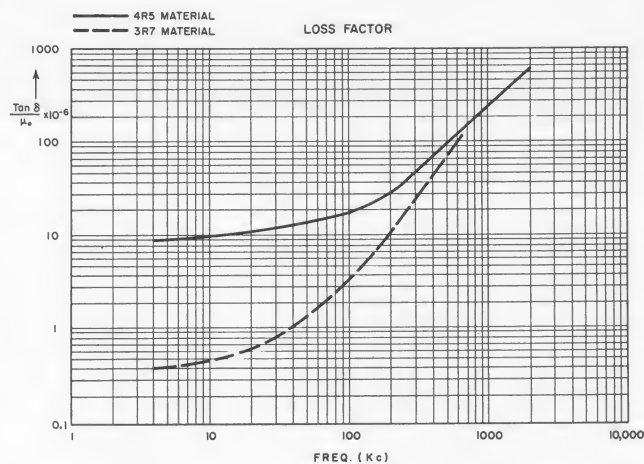
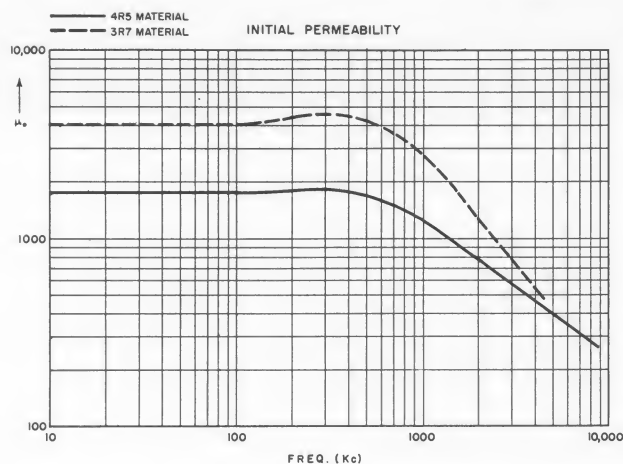
Ferroxcube offers two outstanding recording head materials — 3R7 and 4R5. Optimum ranges of high permeability, low losses, and high density are exhibited in varying degrees in each material. With these materials the higher resolution required to meet and/or exceed the trend to higher packing densities, narrower track widths, and higher frequency operation can be achieved.

3R7 is a material which offers the user an extremely high initial permeability, a low loss factor and a high B saturation.

In addition to 3R7, Ferroxcube offers a high density 4R5 material which is ideally suited for glass bonded pole pieces. 4R5, a premium ferrite, because of its closely controlled material characteristics requires extremely critical manufacturing techniques. This material can be used at frequencies up to 10 Mc. In addition, glass bonding, a proprietary method of joining the pole pieces, insures finer gap definitions. This in turn, prevents gap erosion and achieves smaller gap lengths.

FERROXCUBE MATERIAL	INITIAL PERMEABILITY ( $\mu_0$ )	B <sub>SAT</sub> AT 20° C H=5 OERSTEDS	B <sub>SAT</sub> AT 70° C H=5 OERSTEDS	LOSS FACTOR ( $\frac{TAN \delta}{\mu_0}$ )	SPECIFIC DENSITY	RESISTIVITY ( $\rho$ )	CURIE TEMP. (T <sub>c</sub> )	TEMP. FACTOR (20° - 70° C)
3R7	4500 (± 15%)	3900 gauss min.	Min. 75% of B <sub>SAT</sub> AT 20° C	$\leq 10 \times 10^{-6}$ @ 100 Kc	4.75 (± 3%)	$\geq 30$	$\geq 165^\circ$ C	0 - $2 \times 10^{-6}$
4R5	1600 ± 15%	3200 gauss min.	Min. 75% of B <sub>SAT</sub> AT 20° C	$\leq 25 \times 10^{-6}$ @ 100 Kc	5.30 min	$\geq 10^5$	$\geq 145^\circ$ C	0 - $7.5 \times 10^{-6}$

TYPICAL CHARACTERISTIC CURVES  
3R7 AND 4R5 MATERIALS



# TYPICAL RECORDING HEAD CORES MECHANICAL DIMENSIONS AND TOLERANCES

Shown below are some of the more popular recording head shapes. They are illustrated to show range and scope of our effort. In practice many customers find variations or entirely new configurations to be desirable. We have fabricated many hundreds of different shapes and would be happy to work with you on your specific requirements.

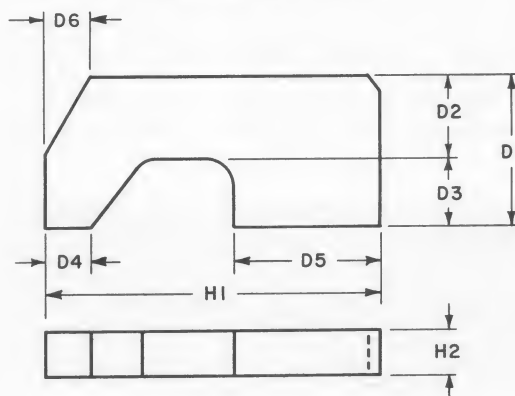
Recognizing the need for precisely controlled dimensions and finishes, particularly on the faces of the gap (at the tip of the head core), we are working to develop

production techniques for finishing operations. Also, methods and equipment for measurements of dimensions as small as .0005 to a tolerance of  $\pm .0005$  have been developed; and allow the maintenance of these precise dimensions where required.

Techniques for measuring and specifying finishes are constantly being improved and perfected. Again, special equipment and techniques had to be perfected and adapted to the application of ferrite.

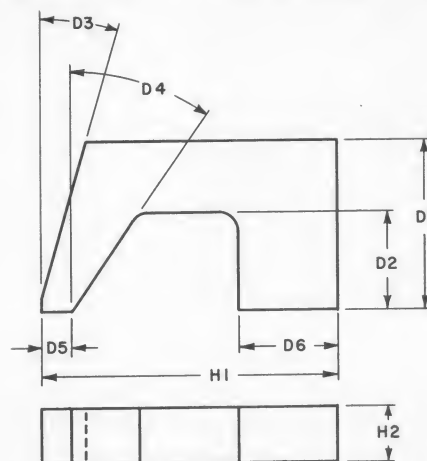
## GENERAL CONFIGURATIONS

TYPE 1



FERROXCUBE PART NUMBER	DIMENSIONS (INCHES)							
	D1	D2	D3	D4	D5	D6	H1	H2
552R	.075 $\pm$ .001	.040 REF	.035 $\pm$ .005	.015 $\pm$ .006 - .003	.075 $\pm$ .000 - .015	.015 $\pm$ .000 - .005	.170 $\pm$ .001	.025 $\pm$ .002 - .001
750R	.060 $\pm$ .001	.030 $\pm$ .001	.030 REF	.012 $\pm$ .002	.050 $\pm$ .005	.012 $\pm$ .000 - .005	.118 $\pm$ .001	.025 $\pm$ .001

TYPE 2



FERROXCUBE PART NUMBER	DIMENSIONS (INCHES)							
	D1	D2	D3	D4	D5	D6	H1	H2
393R	.180 $\pm$ .001	.101 REF	45° REF	45° REF	.020 $\pm$ .005 - .000	.120 $\pm$ .000 - .015	.433 $\pm$ .005	.040 $\pm$ .001
517R	.101 $\pm$ .001	.056 $\pm$ .001	16° REF	35° REF	.0175 $\pm$ .0025	.059 $\pm$ .001	.1755 $\pm$ .001	.034 $\pm$ .001 - .000



**FERROXCUBE** CORPORATION OF AMERICA/SAUGERTIES, N.Y.



**FERROXCUBE  
CORPORATION OF AMERICA  
SAUGERTIES, NEW YORK**

**STANDARD  
FLYING DRUM HEAD  
9 TRACK**

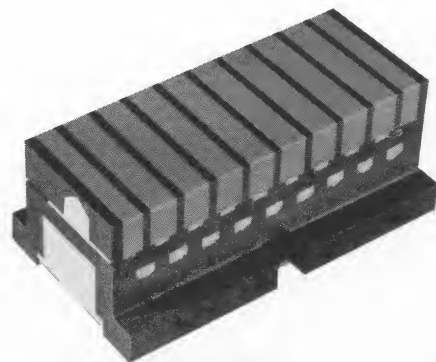
Bulletin 1006

The first completely glass bonded ferrite magnetic recording head is offered by Ferroxcube . . . a standard nine-track drum head. The proprietary glass bonding technique, utilized for both gap construction and multi-track assembly, culminates years of development experience.

**FEATURES AND APPLICATIONS**

To meet the high packing requirements of multi-track recording, the Ferroxcube Corporation offers a new high density nine-track flying drum recording head . . . a head featuring excellent static and dynamic characteristics.

A new high frequency Ferroxcube ferrite material 4R5 — combines high permeability, low losses, and high density (typically less than -1% porosity) This high density provides each head with an almost void-free surface with a finish better than 2 microinches. Furthermore, excellent gap definition is assured. Each Ferroxcube recording head is completely homogeneous and dimensionally stable because the "flying" surface is all glass and ceramic. Typical flatness is 10 to 30 microinches. The ceramic ferrite and glass are selected for matched temperature coefficients of expansion.



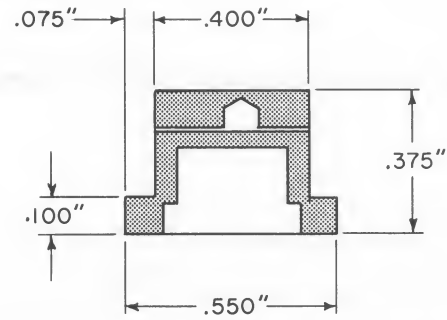
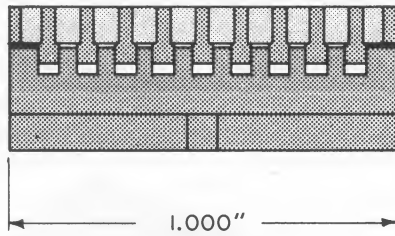
All-glass bonded 9-track standard Ferroxcube Read-Write Recording Head employs new Ferroxcube 4R5 high-density, high-permeability, high-frequency magnetic material.

In addition to these features, Ferroxcube glass bonded recording heads enable the manufacture of gap lengths as small as 30 microinches with less than 100 microinches of gap scatter. Because Ferroxcube is uniquely equipped to deliver both production and prototype recording head assemblies to almost any individual requirement, Ferroxcube wants the opportunity to help solve your recording head problems.

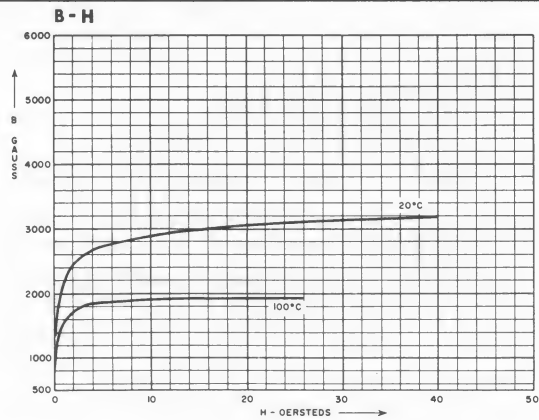
**TYPICAL SPECIFICATIONS  
STANDARD FLYING DRUM RECORDING HEAD ASSEMBLY**

STATIC	Number of Tracks:	Nine	DYNAMIC	Flies at height of approximately 120 microinches from 18" diameter drum at 1240 ips.
	Gap Length:	200 microinches ±10%		Using an oxide-coated drum of above specifications and 115 ma peak "write" current, an average readback of 27 and 21 millivolts, peak-to-peak, was obtained at 750 and 1500 flux-reversals per inch, respectively.
	Track Width:	.020" ±.001		
	Center-to-Center Track Spacing:	0.100"		
	Center-tap L:	21 $\mu$ h ±10%		
	Total L:	84 $\mu$ h ±10%		
	Gap Scatter:	Less than 100 microinches		
	Over-all Size:	1.000" x 0.400" x 0.375"		

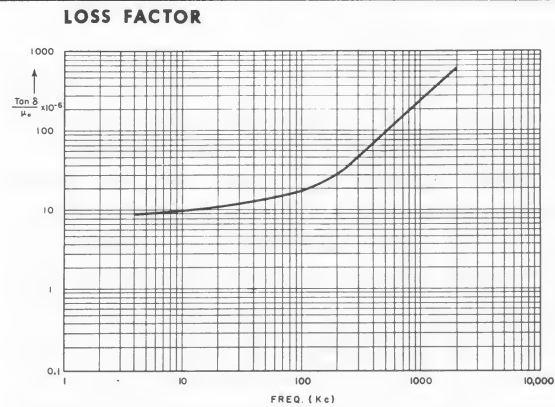
## DIMENSIONS



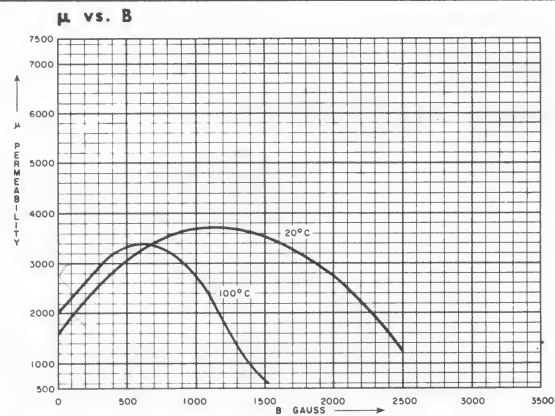
## MATERIAL CHARACTERISTICS



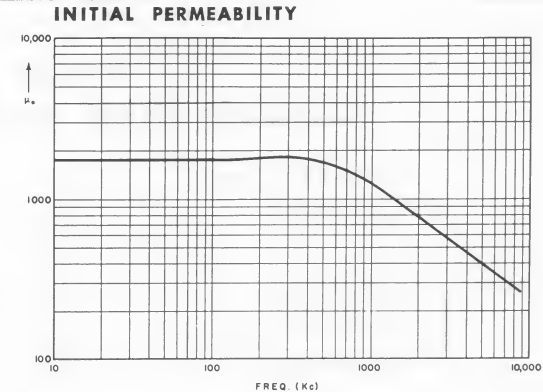
Magnetization curve for new Ferroxcube 4R5 high-density ferrite material.



New Ferroxcube 4R5 exhibits remarkably low loss over its entire frequency range.



New Ferroxcube 4R5 preserves high permeability up to high flux densities, even at elevated temperatures.



Initial permeability of new Ferroxcube 4R5 material is uniformly high over a wide range.



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